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AUTHOR Kwan, Yui-Huen; Bertrand, Alvin L.
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ABSTRACT

In order to test the hypothesis that the longevity of aged persons differs according to residence and by sex, race, and marital status, data from every third year between 1962 and 1974 in the Louisiana State Bureau of Vital Statistics were examined. Criteria for population inclusion were: people over 65 years of age; Louisiana residents at time of death; and death not due to external violence. Altogether, 14,420 deaths of persons over 65 were recorded in 1962; 15,528 in 1965; 16,207 in 1968; 16,018 in 1971; and 16,893 in 1974. Findings indicated: rural females were the most long lived; urban males had the shortest lifespan; urban blacks had the shortest lifespan in 1962 and 1965 and rural whites had the longest lifespan; urban blacks had the shortest lifespan in 1968, 1971, and 1974 and urban whites had the longest life expectancy; urban married persons in 1962, 1965, and 1968 had the shortest lifespan; rural once married had the longest life expectancy; rural married persons had the shortest lifespan in 1974 and rural once married had the longest lifespan; residence had a more pronounced effect on longevity in 1962, 1965, and 1968; in recent years (1971 and 1974), longevity had not been affected as greatly by residence. (JC)

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RESIDENCE AS A FACTOR IN LONGEVITY: A STUDY OF LOUISIANIANS*

by

Yui-Huen Kwan and Alvin L. Bertrand**
Louisiana State University

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Introduction

The remarkable increase in life span in this country since the turn of the century has significantly increased the numbers and proportion of older people in the population. This in turn has increased interest in aging research in general and prediction of longevity in particular. In fact, the search for longer life seems to be universal throughout history and in most societies. It is related to the basic drive for self-preservation, without which no individual or group will survive very long.

In addition to the above there is another practical interest in longevity. This is the "theoretical" premise that longevity research may be a key to unlock the mysteries of human aging processes and the finite life span. By identifying factors related to early death or to longevity, better theories for understanding the basic aging processes may be developed. This research was designed to especially shed light on the differences in longevity of persons living in rural and urban areas.

The Concept of Rural-Urban Differentiation in Social Relations

It has been widely noted that farm folk differ from urban people, and that rural society differs from urban society, principally because of the different environments impinging upon these populations (Bertrand, 1958:25-33). Environmental factors and conditions influence behavior and account in large part for contrasting patterns of behavior in rural and urban populations (Smith, 1953:15-71; Duncan and Reiss, 1956:1; Sorokin and Zimmerman, 1929: 13-58; Loomis and Beegle, 1950; Spaulding, 1951:33; Haer, 1952:343; Kolb and Brunner, 1952:chapter 1; Landis, 1948:chapters 5-7; Nelson, 1955:chapter 2). George Braclay (1958:159) points out that urban conditions have created a less favorable environment for man, and that urban death rates have become higher. Studies have been initiated in several countries with a view to ascertaining the influence of environmental and social factors on the life span of man but little conclusive evidence is yet available (Ciuca, 1967; Blenker, 1967). This fact provided the specific rationale for the study reported in this paper. It was hypothesized that rural-urban differences applied to longevity as well as to other types of relationships (Shock, 1951: 45; Buckley and Schmidt, 1974:24-25; Newcomer, 1976:178-189). Tests for this hypothesis were developed with the focus on the relation of longevity

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**Graduate Research Assistant and Boyd Professor respectively, Dept. of Sociology and Rural Sociology.

to residence. Consideration was also given to the variables of sex, race, and marital status. In essence, this paper was designed to provide knowledge relative to differential longevity in Louisiana and to determine the role of selected environmental conditions on longevity.

Research Procedures

Research Setting. The setting for the present study was the State of Louisiana. The source of data were the Certificate of Deaths on file with the Louisiana State Bureau of Vital Statistics. The period covered by the study was 1962 to 1974. Because of the size of the N, every third year during the period was used as a sample year, that is, 1962, 1965, 1968, 1971, and 1974.

Population. The population universe for the study consisted of all those persons 65 or over who died in Louisiana between 1962 and 1974. The specific criteria for inclusion in the population was determined by the following characteristics: 1) people over 65 years of age, 2) Louisiana resident at time of death, and 3) death not due to external violence (i.e., accident, suicide, and homicide). Altogether, 14,420 deaths of persons over 65 were recorded in 1962, 15,528 in 1965, 16,207 in 1968, 16,018 in 1971, and 16,893 in 1974.

Analytical Procedures. For this report, longevity was defined as the age at death. Individuals were divided into three groups as follows: those persons who died between age 65 to 72, defined as having a low level of longevity; those persons who died between the ages of 73 and 80, defined as having a medium level of longevity; and those persons who died after reaching 81 years of age defined as having a high level of longevity.

The data analysis was not complicated, each independent variable utilized (sex, race, marital status, and residence) was related to the dependent variable, longevity. The Chi Square test was used as a measure of statistical significance for each test made (Leonard, 1976:176; Blalock, 1972:275). Analysis of the dependent and independent variable interrelationships were accomplished through the use of frequency tables. A comparison was made of the importance of each independent variable (sex, race, and marital status) in accounting for the dependent variable longevity, while controlling for residence. The Chi Square test was used as a measure of statistical significance for each such comparison.

Findings

Because of the page limitation for papers, the detailed findings for all sample years will not be presented, although 1962 will be used as an example. However, the means of difference and the t-test for each sample years will be presented.

To test the hypothesis that the longevity of aged persons differed according to residence, and by sex, race, and marital status, a t-test was applied. Using a two-tailed test, the value obtained ($t=4.09$) was significant at the .01 level ($p<.01$). Table 1 and 3 show the results of the t-test for each variable.

Table 1. Residence Differentials in Longevity Among the Louisiana Aged by Selected Years, 1962-1974

Year	D.F.	t Values	p level
1962	13,297	4.091	.01
1965	14,346	5.749	.01
1968	14,869	3.463	.01
1971	14,799	2.903	.01
1974	15,536	-0.713	.48

The null hypothesis of no significant difference between rural and urban residence and longevity had to be rejected on the basis of the findings shown in Table 1. For all the years tested there was a significant difference in longevity between persons living in rural and urban areas. The data presented in Table 2 elaborates the finding that Louisiana rural people lived longer than urban persons once they had attained aged 65. Specifically, it can be seen in Table 2 that only 33.8 percent of the rural aged were in the low longevity group, compared to 36.8 percent of the urban aged. By contrast there were 34.2 percent of the rural aged in the medium longevity group as contrasted with 33.7 percent of the urban aged. The highest longevity group included 32 percent of all the persons aged 65 and over with rural residence but only 29.5 percent of the urban aged.

Table 2. Percentage Distribution of Louisiana Rural and Urban Aged by Level of Longevity, 1962

Level of Longevity	Rural		Urban	
	N	(%)	N	(%)
Low (65-72 years)	2011	(33.8)	3115	(36.8)
Medium (73-80 years)	2033	(34.2)	2856	(33.7)
High (81 years and over)	1907	(32.0)	2498	(29.5)
Total	5951	(100.0)	8469	(100.0)

$X^2 = 16.416$, d.f. = 2, $p<.001$.

The next step in the analysis was to test for an association between level of longevity, and the variables: 1) sex, 2) race, and 3) marital status. Table 3 shows that there were significant differences in these characteristic between the rural and urban population in Louisiana aged 65 and over. Chi Square coefficients were computed, with the residence variable controlled. Table 4 presents the results of the computations made.

Table 3. Sex, Race and Marital Status Differentials, by Residence (Rural and Urban) Among the Aged in Louisiana by Selected Years, 1962-1974

Year	D.F.	t Value		
		Sex	Race	Marital Status
1962	13,297	-9.192*	3.509*	-3.414*
1965	14,346	-5.261*	-0.319	-2.004**
1968	14,869	-7.670*	-0.604	-3.749*
1971	14,799	-5.983*	-3.727*	-4.066*
1974	15,536	-7.738*	-9.250*	-3.885*

*Significant at the .01 level using two-tailed test.
**Significant at the .05 level using two-tailed test.

Table 4. Residence Differentials in Level of Longevity by Sex, Race, and Marital Status for Aged in Louisiana, by Selected Years, 1962-1974

Type of Control	Chi Square Coefficients		
	Sex	Race	Marital Status
1962 Not Controlling Residence	210.02a	243.03a	1043.04b
Controlling Residence	242.50c	267.57c	1098.87d
1965 Not Controlling Residence	247.05a	217.27a	1137.84b
Controlling Residence	291.59c	265.50c	1200.58d
1968 Not Controlling Residence	246.72a	185.54a	1247.81b
Controlling Residence	329.97c	234.79c	1292.98d
1971 Not Controlling Residence	377.80a	133.88a	1311.65b
Controlling Residence	391.95c	155.79c	1340.67d
1974 Not Controlling Residence	526.17a	88.84a	1524.73b
Controlling Residence	531.01c	115.99c	1532.32d

a--with 2 d.f. b--with 4 d.f. c--with 6 d.f.
d--with 10 d.f.
All the above X^2 were significant at the .001 level.

As can be seen in Table 4, longevity was significantly associated with Sex, Race and Marital Status among the Louisiana aged population in 1962. The same general pattern persisted in the other years studied. Each of these characteristics is considered in turn in the discussion which follows.

If sex is considered first, it can be seen in Table 5 that sex of the aged person was positively associated with level of longevity (X^2 = 210.02).

Interestingly, in the low level of longevity category, relatively more males than females were represented. This suggest correctly that the Louisiana female aged have a longer life-span than do the males of the State.

Table 5. Sex and Level of Longevity of Louisiana Aged, 1962 (N=14420)

Level of Longevity	Sex			
	Male		Female	
	N	(%)	N	(%)
Low (65-72 years)	3005	(40.2)	2121	(30.5)
Medium (73-80 years)	2535	(33.9)	2354	(33.9)
High (81 years and over)	1927	(25.8)	2478	(35.6)
Total	7467	(100.0)	6953	(100.0)

$X^2 = 210.02$, d.f. = 2, $p<.001$.

In order to determine whether or not residences make any difference in the above pattern, the residence variable was controlled, as shown in Table 6. The results of this test show that residence is associated with longevity regardless of sex. Louisiana urbanites, no matter whether male or female, had a shorter life-span than their rural aged counterparts in 1962.

Table 6. Longevity of Louisiana Aged by Sex and Residence, 1962 (N=14420)

Level of Longevity	Rural				Urban			
	Male		Female		Male		Female	
	N	(%)	N	(%)	N	(%)	N	(%)
Low (65-72 years)	1248	(37.3)	763	(29.3)	1757	(42.6)	1358	(31.3)
Medium (73-80 years)	1141	(34.1)	892	(34.2)	1394	(33.8)	1462	(33.6)
High (81 years and over)	954	(28.3)	953	(36.5)	973	(23.6)	1525	(35.1)
Total	3343	(100.0)	2608	(100.0)	4124	(100.0)	4345	(100.0)

$X^2 = 242.5$, d.f. = 6, $p<.001$.

Turning to race characteristics of longevity, Table 7 shows the results of the computations made. There it can be seen that the black aged had a shorter life-span than the white aged in Louisiana, in 1962. Some 43.5 percent of the black aged in the state fell in the low level of longevity group, as compared to only 31.7 percent of white aged. By comparison, the highest level of longevity group included 34 percent of the white aged, but only 23.3 percent of the black aged. Clearly more whites than blacks survived to the age of 81 years or over.

Table 7. Race and Level of Longevity of Louisiana Aged, 1962 (N=14420)

Level of Longevity	Race			
	White		Black	
	N	(%)	N	(%)
Low (65-72 years)	3096	(31.7)	2030	(43.5)
Medium (73-80 years)	3344	(34.3)	1545	(33.1)
High (81 years and over)	3318	(34.0)	1087	(23.3)
Total	9758	(100.0)	4662	(100.0)

$X^2 = 243.031$, d.f. = 2, $p<.001$.

Taking into consideration residence, the study findings show that the black aged in both urban and rural areas had a shorter life-span than the white aged. As can be seen in Table 8, the urban black aged were relatively more likely than the urban white aged to be found in the low level of longevity group (45.6 versus 40.8 percent). The same pattern held true for ruralites within the two races. In this regard, the fact that rural whites turned out to be the longest lived of all groups is most interesting.

Table 8. Longevity of Louisiana Aged by Race and Residence, 1962 (N=14420)

Level of Longevity	Rural				Urban			
	White		Black		White		Black	
	N	(%)	N	(%)	N	(%)	N	(%)
Low (65-72 years)	1194	(30.2)	817	(40.8)	1902	(32.7)	1213	(45.6)
Medium (73-80 years)	1376	(34.8)	657	(32.8)	1968	(33.9)	888	(33.4)
High (81 years and over)	1380	(34.9)	527	(26.3)	1938	(33.4)	560	(21.0)
Total	3950	(100.0)	2001	(100.0)	5808	(100.0)	2661	(100.0)

$X^2 = 267.57$, d.f. = 6, $p<.001$.

To test the marital status variable, the Louisiana aged in the sample population were classed into three categories: single, married, and once married. The data in Table 9 suggests that married persons among the aged in Louisiana in 1962 had a shorter life-span than single persons. Some 47.9 percent of the former as compared to 36.3 percent of the latter were at the lowest life expectancy level. However, when the married and once married (widowed or divorced) are lumped together, this group has a longer life-span expectancy than the single (35.5 percent as compared to 36.3 percent in the lowest longevity grouping and 30.7 percent versus 29.1 percent in the

highest longevity group). This finding is consistent with the findings of studies which show that married persons tend to live longer than single persons.

Table 9. Marital Status and Level of Longevity of Louisiana Aged, 1962 (N=14319)

Level of Longevity	Marital Status					
	Single		Married		Once Married	
	N	(%)	N	(%)	N	(%)
Low	374	(36.3)	2776	(47.9)	1940	(25.9)
Medium	356	(34.6)	2008	(34.7)	2488	(33.2)
High	300	(29.1)	1008	(17.4)	3069	(40.9)
Total	1030	(100.0)	5792	(100.0)	7497	(100.0)

$X^2 = 1043.037$, d.f. = 4, $p<.001$.

When the longevity pattern of the various marital status groups among Louisiana aged in 1962 are related to residence, an interesting picture emerges. It may be seen in Table 10 that persons who were once married or are now married and living in urban areas had a shorter relative life-span than persons with these marital characteristics living in rural areas. Urban dwellers who were single lived longer, apparently, than the rural single or never married persons--see Table 10. However, when the married and once married are lumped into one group, the urban dwellers had a shorter life-span expectancy than the rural dwellers (29.1 percent to 32.3 percent).

Summary and Conclusions

In summary, the analysis carried out definitely supported the thesis of a residential differential in longevity. Rural females apparently are the most long lived group in Louisiana, while urban males have the shortest life-span.

It was found that in 1962 and 1965, urban blacks had the shortest life-span and rural whites the longest life-span. But in 1968, 1971, and 1974, urban blacks had the shortest life-span, white urban whites had the longest life expectancy. Although it has not been established that racial differentials in longevity should be attributed to "race" differences per se; it is likely that they are caused by differences in levels of living--more particularly by the lack of educational and economic opportunity of blacks.

Marital status has been consistently found to be highly associated with longevity; with most research indicating that married persons live longer than those not married (Rose, 1971; Pfeiffer, 1971; Powers and Bultena, 1972). It has been suggested both that healthier individuals (i.e., those most able to cope with stress) tend to marry at higher rates than unhealthy persons, and that marriage provides a social and physical environment more conducive to longevity. The data collected supported the above findings, only when married and once married persons were lumped into one group. In 1962, 1965,

Table 10. Longevity of Louisiana Aged by Marital Status and Residence, 1962 (N=14319)

Level of Longevity	Rural						Urban					
	Single		Married		Once Married		Single		Married		Once Married	
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
Low	130	(39.2)	1204	(45.3)	668	(22.8)	244	(35.0)	1572	(50.1)	1272	(27.9)
Medium	112	(33.7)	965	(36.3)	947	(32.3)	244	(35.0)	1043	(33.3)	1541	(33.8)
High	90	(27.1)	488	(18.4)	1321	(45.0)	210	(30.0)	520	(16.6)	1748	(38.3)
Total	332	(100.0)	2657	(100.0)	2936	(100.0)	698	(100.0)	3135	(100.0)	4561	(100.0)

$X^2 = 1098.87$, d.f. = 10, $p<.001$.

and 1968, it was found that urban married persons had the shortest life-span, while rural once married persons had the longest life expectancy. In 1974, rural married persons had the shortest life-span and rural once married individuals the longest life-span. Chart 1 presents a summary of the findings reported in this paper.

Chart 1. Summary of the Longest and the Shortest Life-Span Aged of Louisiana by Differentials of Sex, Race, and Marital Status by Sample Years

Year	Differential	Shortest Life-Span	Longest Life-Span
1962	Sex	Urban male	Rural female
	Race	Urban black	Rural white
	Marital Status	Urban married	Rural once married
1965	Sex	Urban male	Rural female
	Race	Urban black	Rural white
	Marital Status	Urban married	Rural once married
1968	Sex	Urban male	Rural female
	Race	Urban black	Urban white
	Marital Status	Urban married	Rural once married
1971	Sex	Urban male	Rural female
	Race	Urban black	Urban white
	Marital Status	Urban once married	Rural once married
1974	Sex	Urban male	Urban female
	Race	Urban black	Urban white
	Marital Status	Rural married	Rural once married

From the above findings, we can declare that residence had a more pronounced effect on longevity in 1962, 1965, and 1968. In recent years (1971, 1974), longevity has not been affected as greatly by residence. Youmans (1967:113-115), after studying the disengagement of elderly men in three areas of life: economic, family relationships, and leisure-time activities, concluded that decline in economic status occurred more sharply with age in the urban than in the rural areas. He concluded that urban men evidenced somewhat stronger feelings of rejection by their families than did rural men, a finding which probably reflects the greater prevalence of family cohesion in rural areas.

In a study of counties with extreme death rates, and to the degree of persistence of extreme rates through time and space, and in different age-sex groups, Sauer and Parke (1974:258-264) found that men in low-rate counties tended to be more closely associated with agriculture, than their counterparts in the high-rate counties. Herbert Sauer (1976:41) also found that rural areas generally tended to have lower death rates in middle-age

populations than did urban areas, although this difference seemed to be decreasing. The implication of the above seems to be quite clear. Rural life and living does not place as great a stress on people, and consequently increases their life expectancy.

With regards to the finding that women in Louisiana live longer than men, other investigators have found that women in modern industrial societies generally live longer than men (Rose, 1971; Baer and Gaitz, 1971). In fact, Siegel and O'Leary (1973) project a continuation of this trend into the next centruy. Both biological and sociological explanations have been presented for female longevity dominance. Clark (1964) proposed that genetic factors are responsible for the female's greater ability to cope with environmental stress and hazards, while Hamilton and Mestler (1969), after examining the longevity rates among intact males, eunuchs, and normal females determined that the female's longer longevity record is due to a more adaptive endocrine system which retards the aging process. However, a purely biological explanation does not account for decreased female longevity in non-industrialized societies. It is thus that a more sociological answer has to be given. In this vein, Bogue (1959) observed that due to cultural mores, women are not usually subjected to many of the physical hazards to which men are subjected.

In addressing the question of why women tend to live longer than men, perhaps an answer will begin to emerge as the environment, role, and life-styles of men and women become more similar. Present trends toward more equality between the sexes and less discrimination against women in various workfields should produce a more similar social environment for men and women. If the increasing role equality of men and women does not result in similar patterns of longevity, this will indicate finally that hereditary differences are the main explanation of the differences in life expectancy between the sexes. For the present, the implication remains that planning for the aged should take into consideration the longer life expectancy of women.

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